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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/687,944

10/17/2003

Patrick L. Connor

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01/24/2006

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EXAMINER

LEE, CHUN KUAN

ART UNIT

PAPER NUMBER

2181

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/687,944

Applicant(s)

CONNOR, PATRICK L.

Examiner

Chun-Kuan (Mike) Lee

Art Unit

2181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Amendment to the drawing is acknowledge and entered and objection to claim 9 is withdrawn.

2. Applicant's arguments, filed on 10/27/2005, with respect to the rejections of claims 1-30 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Chen et al. (US Patent 6,351,785) and Reid et al. (US Patent 6,115,776).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US Patent 6,351,785) further in view of Reid et al. (US Patent 6,115,776).

3. As per claim 1, 10, 19 and 22, Chen teaches a system, a method, an interrupt generator and an article of manufacture comprising a computational device (processor 104 of Fig. 1); a storage (Fig.1 ref 108, 106, 110) coupled to the computational device; initiating a timer with interrupt event arrival rates (time interval between succeeding peripheral component event) (col. 10, l. 39 to col. 11, l. 64); measuring (measuring by determining the time interval between succeeding peripheral component events) a rate of arrival of one or more interrupt events (peripheral component event) (Fig. 5 ref 503 and col. 10, l. 39 to col. 11, l. 64); and asserting an interrupt, in response to the measured rate of arrival of the one or more interrupt events being lower than the interrupt event arrival rate associated with the timer (Fig. 5), wherein as the arrival rate become lower, the time interval between peripheral component event become longer, and if the arrival rate is below the interrupt event arrival rate associated with the timer, such as the time interval between peripheral component event become larger then the time threshold, an interrupt is asserted.

Chen does not teach a system, a method, an interrupt generator and an article of manufacture comprising configuring of a plurality of timers, an interrupt moderator, a storage controller manage Input/Output access to the storage, wherein the storage controller is coupled to the computational device, and an interrupt generator, wherein the interrupt generator is being coupled to the computational device.

Reid teaches a system, a method, an interrupt generator and an article of manufacture comprising configuring of a plurality of timers (Fig. 3 ref 114, 115) by programming (col. 6, l. 66 to col. 7, l. 15); and an adaptor control (Fig. 3 ref 112)

coupled to the plurality of timers and the CPU, functioning as an interrupt moderator, interrupt generator and storage controller (col. 5, ll. 6-67).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Reid's configuration of the plurality of timers and interrupt moderator into Chen's system, method, interrupt generator and article of manufacture, doing so would further add and expand Chen's system, method, interrupt generator and article of manufacture by enabling the setting of different interrupt generating reasons for each individual timers (Reid, col. 6, l. 66 to col. 7, l. 15).

4. As per claim 2, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the one or more interrupt events include arrivals of packets (Chen, peripheral component event, col. 6, l. 65 to col. 7, l. 6), and wherein the configured interrupt event arrival rates are different for at least two timers, and the measuring is performed with the at least two timers, and wherein the plurality of timers represent measuring devices (Reid, col. 6, l. 19 to col. 7, 15).

5. As per claim 3, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture further comprising in response to asserting the interrupt, restarting (restart after timer reset) the plurality of timers (Reid, col. 6, l. 19 to col. 7, 15).

6. As per claim 4, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the configuration further comprises initializing the plurality of timers with countdown time periods, wherein a countdown time period measures a period of time (Chen, col. 12, ll. 5-51); and initializing the plurality of timers with a reset criteria (Reid, interrupt reason, col. 6, l. 19 to col. 7, 15), wherein a first reset criterion for a first timer indicates a first number of interrupt events that are to be received by the first timer within a first countdown time period for the first timer to be restarted and wherein a second reset criterion for a second timer indicates a second number of interrupt events that are to be received by the second timer within a second countdown time period for the second timer to be restarted (Reid, col. 6, l. 19 to col. 7, 15).

7. As per claim 5, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the configuration of the plurality of timers regulates a latency of an arriving interrupt event in generating interrupts (Reid, col. 6, l. 19 to col. 7, 15).

8. As per claim 6, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the configuration, measurement, and assertion result in one interrupt being generated for a plurality of arriving events (Chen, Figures 4-6 and col. 2, ll. 1-11).

9. As per claim 7, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the configuration, measurement, and assertion are performed by an interrupt generator (Reid, adaptor controller 112 of Fig 3), including an Input/Output controller (Reid, adaptor controller 112 of Fig 3), wherein the interrupt generator is coupled to a computational device (Fig. 3), wherein the computational device is capable of receiving the one or more interrupt events to result in interrupts at one rate at which the computational device can process the interrupts without decreasing performance of other functions of the computational device (Chen, Figures 4-6, Abstract, col. 2, l.1 to col. 3, l. 43).

10. As per claim 8, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the configuration and assertion are performed by the interrupt moderator (Reid, adaptor controller 112 of Fig. 3) included in a computational device, wherein the interrupt moderator includes the plurality of timers (Reid, Fig. 3 ref 114-115), wherein an interrupt moderation level of a first timer is different from an interrupt moderation level of a second timer (Reid, col. 6, l. 19 to col. 7, 15).

11. As per claim 9, Chen as modified teaches a system, a method, an interrupt generator and an article of manufacture comprising wherein the configuration of the plurality of timers is based on a consideration of possible load on a processor (CPU)

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based on a level of possible interrupts to the processor and a desired latency of the arriving interrupt events (Chen, Abstract and Figures 4-5).

Claims 11-18 repeat the limitations of claims 2-9 and are therefore rejected accordingly.

Claims 20-21 repeat the limitations of claims 3-4 and are therefore rejected accordingly.

Claims 23-30 repeat the limitations of claims 2-9 and are therefore rejected accordingly.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671 and email is chunkuan.lee@uspto.gov. The examiner can normally be reached on 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huynh Kim Ngoc (Kim) can be reached on (571) 272-4147. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature of relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Mailed responses to this action should be sent to:

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Faxes for Official/formal (After Final) communications or for informal or draft communications (please label "PROPOSED" or "DRAFT") sent to:

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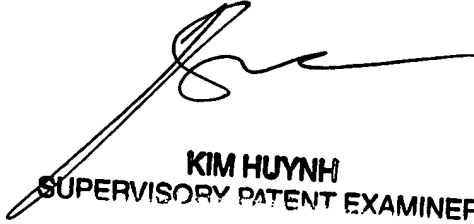
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C.K.L.
01/12/2006


KIM HUYNH
SUPERVISORY PATENT EXAMINER
1/16/06